



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/702,112	10/30/2000	Michael Gottlieb Jensen	1778.1730000	8333
26111	7590	11/15/2004	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			ELLIS, RICHARD L	
			ART UNIT	PAPER NUMBER
			2183	

DATE MAILED: 11/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/702,112	JENSEN ET AL.	
	Examiner Richard Ellis	Art Unit 2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 14 September 2004.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-35 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-35 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 9/14/04.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

1. Claims 1-35 are presented for examination.
2. 35 USC § 101 reads as follows:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".
3. Claims 24-29 and 34-35 are rejected under 35 USC § 101 because the claimed invention is directed to non-statutory subject matter. Applicant's claims 34-35 attempt to claim electromagnetic signals. Electromagnetic signals are not patentable because they do not fall within one of the statutory classes of subject matter allowed by 35 USC § 101. Applicant's claims 24-29 use the term "computer usable medium" which is defined by the specification broadly enough to encompass electromagnetic signals.

To define what is meant by a signal one must begin with basic concepts of the physical world. As explained in Gillespie et al., Chemistry 2 (Allyn and Bacon, Inc. 1986):

"We can describe the universe, and all the changes occurring in it, in terms of two fundamental concepts: matter and energy. Matter is anything that occupies space and has mass. Water, air, rocks, and petroleum, for example, are matter, but heat and light are not; they are forms of energy. The many different kinds of matter are known as substances. . ."

When referring to "structure" or "material" or "substance" what is being referred to is matter and things made up of matter. Energy is further defined at Chemistry 53:

"The capacity to do work is called energy. Gasoline, for example, possesses energy because when it is burned, it can do the work of moving a car. We measure energy by the work done, and thus energy, like work, is measured in joules.

In practice, it is convenient to distinguish different forms of energy, such as heat energy, light energy, electric energy, and chemical energy. . ."

Energy has physical existence because it is capable of doing work and of being measured, but is incorporeal.

The claimed electromagnetic signal is a form of electric energy which has physical existence as an electromagnetic wave in a communications path or as an electrical voltage in the circuits of a transmitter or receiver. This is distinguished from the use of the term signal to refer to an abstract quantity such as a number. See In re Walter, 618 F.2d 758, 770, 205 USPQ 397, 409 (CCPA 1980) ("The 'signals' processed by the inventions of claims 10-12 may represent either physical quantities or abstract quantities; the claims do not require one or the

other").

The starting point for nonstatutory subject matter analysis is the statute, 35 USC § 101, and the Supreme Court's basic principles as enunciated in Diamond v. Diehr, 450 U.S. 175 (1981). As stated in In re Warmerdam, 33 F.3d 1354, 1358, 31 USPQ2d 1754, 1758 (Fed. Cir. 1994):

"Despite the oft-quoted statement in the legislative history of the 1952 Patent Act that Congress intended that statutory subject matter "include anything under the sun that is made by man," S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952), reprinted in 1952 U.S.C.C.A.N. 2394, 2399; H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952), Congress did not so mandate. Congress included in patentable subject matter only those things that qualify as "any . . . process, machine, manufacture, or composition of matter, or any . . . improvement thereof. . . ." 35 U.S.C. § 101. . . .

To include some things is to exclude others. The chore of defining exactly what is excluded under § 101, and applying such definitions to specific cases, has caused courts to expend much effort in trying to find the right words to describe some rather abstract notions. In Diamond v. Diehr, 450 U.S. 175 (1981), the Supreme Court summarized the scope of the § 101 exclusion and the Court's prior efforts at describing it by saying "[e]xcluded from such patent protection are laws of nature, natural phenomena, and abstract ideas. . . . Our recent holdings in Gottschalk v. Benson and Parker v. Flook, both of which are computer-related, stand for no more than these long-established principles." Id. at 185.

Two comments are relevant. First, subject matter must first fall within § 101 before the exclusions apply. See In re Pardo, 684 F.2d 912, 916, 214 USPQ 673, 677 (CCPA 1982) ("[A]ny process, machine, manufacture, or composition of matter constitutes statutory subject matter unless it falls within a judicially determined exception to section 101."); In re Sarkar, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978) ("[A] series of steps is a 'process' within § 101 unless it falls within a judicially determined category of nonstatutory subject matter exceptions."). Second, it is not certain that "laws of nature, natural phenomena, and abstract ideas" represent an exhaustive set of statutory subject matter exclusions, such that "laws of nature, natural phenomena, and abstract ideas" combined with the set of "process, machine, manufacture, or composition of matter" comprises a universal set all possible types of subject matter. Thus, subject matter is not presumed to be statutory under 35 U.S.C. § 101 if it does not fit within the enumerated exclusions of "laws of nature, natural phenomena, and abstract ideas." The proper analysis is to determine whether the claimed subject matter falls within one of the four classes of § 101 and, if so, whether the subject matter falls within one of the exclusions.

First the claimed signal is analyzed under the definitions of the four statutory classes of § 101. The claimed signal is clearly not a "process" under § 101 because it is not a series of steps. The other three § 101 classes of machine, compositions of matter and manufactures "relate to structural entities and can be grouped as 'product' claims in order to contrast them with process claims." D. Chisum, Patents § 1.02 (1994). The three product classes have traditionally required physical structure or material (matter).

"The term machine includes every mechanical device or combination of mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result." Corning v. Burden, 56 U.S. (15 How.) 252, 267 (1854). A modern definition of machine would no doubt include electronic devices which perform functions. Indeed, devices such as flip-flops and computers are referred to in computer science as sequential machines. The claimed signal has no physical structure, does not itself perform any useful, concrete and tangible result and, thus, does not fit within the definition of a machine.

A "composition of matter" "covers all compositions of two or more substances and includes all composite articles, whether they be results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids." Shell Development Co. v. Watson, 149 F. Supp. 279, 280, 113 USPQ 265, 266 (D.D.C. 1957), aff'd, 252 F.2d 861, 116 USPQ 428 (D.C. Cir. 1958). The claimed signal is not matter, but a form of energy, and therefore is not a composition of matter.

The Supreme Court has read the term "manufacture" in accordance with its dictionary definition to mean "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." Diamond v. Chakrabarty, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting American Fruit Growers, Inc. v. Brogdex Co., 283 U.S. 1, 11, 8 USPQ 131, 133 (1931), which, in turn, quotes the Century Dictionary). Other courts have applied similar definitions. See American Disappearing Bed Co. v. Arnaelsteen, 182 F. 324, 325 (9th Cir. 1910), cert. denied, 220 U.S. 622 (1911). These definitions require physical substance, which the claimed signal does not have. Congress can be presumed to be aware of an administrative or judicial interpretation of a statute and to adopt that interpretation when it re-enacts a statute

without change. Lorillard v. Pons, 434 U.S. 575, 580 (1978). Thus, Congress must be presumed to have been aware of the interpretation of manufacture in American Fruit Growers when it passed the 1952 Patent Act.

A manufacture is also defined as the residual class of product. Chisum, § 1.02[3] (citing W. Robinson, The Law of Patents for Useful Inventions 270 (1890)). A product is a tangible physical article or object, some form of matter, which the claimed signal is not. That the other two product classes, machine and composition of matter, require physical matter is evidence that a manufacture was also intended to require physical matter. The claimed signal, a form of energy, does not fall within either of the two definitions of manufacture.

Continuing to look at the § 101 class of manufacture, in In re Hruby, 373 F.2d 997, 153 USPQ 61 (CCPA 1967), the CCPA held that there was no distinction between the meaning of "manufacture" in § 101 and "article of manufacture" in § 171 for designs. The issue in Hruby was whether that portion of a water fountain which is composed entirely of water in motion was an article of manufacture. The CCPA relied on the analysis of the term manufacture in Riter-Conley Mfg. Co. v. Aiken, 203 F. 699 (3d Cir.), cert. denied, 229 U.S. 617 (1913), a case involving a utility patent. The CCPA stated in Hruby, 373 F.2d at 1000, 153 USPQ at 65:

"The gist of it is, as one can determine from dictionaries, that a manufacture is anything made "by the hands of man" from raw materials, whether literally by hand or by machinery or by art."

The CCPA held that the fountain was made of the only substance fountains can be made of --water-- and determined that designs for water fountains were statutory. Articles of manufacture in designs manifestly require physical matter to provide substance for embodiment of the design. Thus, since "article of manufacture" under § 171 has the same meaning as "manufacture" under § 101, it is inevitable that a manufacture under § 101 requires physical matter.

Some indirect evidence that Congress intended to limit patentable subject matter to physical things and steps is found in 35 USC § 112 paragraph 6. Paragraph 6 states that an element in a claim for a combination may be expressed as a "means or step" for performing a function and will be construed to cover the corresponding "structure, material, or acts

described in the specification and equivalents thereof." "Structure" and "material" indicate tangible things made of matter, not energy.

The claimed signal does not fit clearly within one of the three Diehr exclusions of "laws of nature, natural phenomena or abstract ideas." A signal may be an abstraction because it is disembodied in the sense of having no physical structure. Even if the signal were a signal in a wire, which requires movement of physical matter such as electrons, the signal is the propagating disturbance in the medium, not the medium itself. In any case, however, the exclusions are not controlling because subject matter must first fall within § 101 before the exclusions apply. Pardo and Sarkar, *supra*.

4. The text of those sections of Title 35, US Code not included in this action can be found in a prior Office Action.

5. Claims 1-35 are rejected under 35 USC § 103 as being unpatentable over Larsen et al., U.S. Patent 5,115,500, in view of Heene et al., U.S. Patent 4,802,119.

Larsen et al. and Heene et al. were first cited as prior art references in paper number 6, mailed November 14, 2003.

6. The rejections are respectfully maintained and incorporated by reference as set forth in the last office action, paper number 13, mailed May 20, 2004.

7. In the remarks, applicant argues in substance:

7.1. That: "claim 1, as amended, includes (*emphasis added*): ... wherein *the size of an address range corresponds to the distribution of program instructions for the corresponding ISA decoding mode*; ... Neither Larsen, nor Heene, nor any other previously cited document, alone or in combination, teaches the feature(s) of claim 1 as cited above."

This is not found persuasive because Larsen et al. teaches this concept at least at col. 5 lines 2-13 and 41-51. At lines 2-13, Larsen et al. indicates (*emphasis added*):

"The well known function of the link editor program, not shown but well known to those of skill in the art, is to assign separately identified or otherwise segregated or mapped locations in the I-store 2 to the various portions of machine language code being used. This may be easily accomplished by reserving major segments, for example the high order address locations, for one language or format instruction type and the remaining segments in I-store for other languages or formats."

Furthermore, at lines 41-51, Larsen et al. additionally indicates (*emphasis added*):

"As illustrated, the high order addresses have been arbitrarily reserved for machine type or format 2 instructions. These are identified as having the high order address

beginning with 111 in binary and reserve 1/8 of the instruction store total capacity for machine type 2 instructions. The remaining addresses are arbitrarily reserved for machine type 1 instructions as illustrated."

As is known from the English language, the definition of "arbitrarily" is"

"**arbitrary** 1: depending on individual discretion (as of a judge) and not fixed by law
2 a: not restrained or limited in the exercise of power : ruling by absolute authority b:
marked by or resulting from the unrestrained and often tyrannical exercise of power
3 a: based on or determined by individual preference or convenience rather than by
necessity or the intrinsic nature of something b: existing or coming about seemingly at
random or by chance or as a capricious and unreasonable act of will" *Webster's Ninth
New Collegiate Dictionary*, Merriam-Webster, Inc., 1990.

The definition which most closely fits the context of Larsen et al.'s use of the word "arbitrary" is definition 3a, which indicates that the choice of partition size is determined by individual preference or convenience, which indicates that Larsen et al. was signaling that choosing a size of an address range to correspond to the distribution of program instructions was a design parameter of his system.

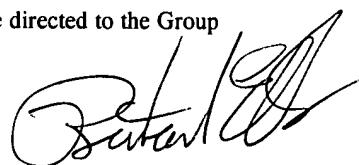
8. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

9. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Richard Ellis whose telephone number is (571) 272-4165. The Examiner can normally be reached on Monday through Thursday from 7am to 5pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Eddie Chan, can be reached on (571) 272-4162. The fax phone number for the USPTO is: (703)872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Richard Ellis
November 8, 2004



RICHARD L. ELLIS
PRIMARY EXAMINER